MAYO CLINIC LABORATORIES

Test Definition: ENAE

Antibody to Extractable Nuclear Antigen Evaluation, Serum

Overview

Useful For

Evaluating patients with clinical features suggestive of antinuclear antibody (ANA) associated connective tissue disease. May also be indicated in patients who test negative for ANA and have features of Sjogren syndrome and idiopathic inflammatory myopathies

Profile Information

Test Id	Reporting Name	Available Separately	Always Performed
SSA	SS-A/Ro Ab, IgG, S	Yes	Yes
SSB	SS-B/La Ab, IgG, S	Yes	Yes
SM	Sm Ab, IgG, S	Yes	Yes
RNP	RNP Ab, IgG, S	Yes	Yes
SCL70	Scl 70 Ab, IgG, S	Yes	Yes
JO1	Jo 1 Ab, IgG, S	Yes	Yes

Testing Algorithm

For more information see Connective Tissue Disease Cascade.

Special Instructions

- Connective Tissue Disease Cascade

Method Name

Multiplex Flow Immunoassay

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Collection Container/Tube:

Preferred: Red top

Acceptable: Serum gel

Submission Container/Tube: Plastic vial

Specimen Volume: 0.5 mL
Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Specimen Minimum Volume

0.35 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	OK
Heat-Treated	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	21 days	
	Frozen	21 days	

Clinical & Interpretive

Clinical Information

Antibodies to SS-A/Ro, SS-B/La, Smith (Sm), U1RNP (RNP68/A), Scl 70 and JO1 are associated with the presence of antinuclear antibodies (ANA) and useful in the evaluation of specific ANA-associated connective tissue diseases (CTD), ANA-CTD.(1) Due to their frequencies in ANA-CTD and the overlapping clinical presentations of these diseases, inclusion of these tests in a panel may be useful at initial evaluation of patients at-risk for certain CTD. The combined presence of antibodies to SS-A/Ro (Ro52 and Ro60) and anti-SS-B/La is highly suggestive of Sjogren syndrome.(2,3) Separate determination of anti-Ro52 and anti-Ro60 antibodies is preferred to combined SS-A/Ro in the evaluation of ANA-CTD as their differential presence maybe useful in risk stratification and prognosis of ANA-CTD patients.(4) The presence of anti-Sm antibodies are specific for systemic lupus erythematosus (SLE) and is included the classification criteria for disease.(5) Monospecific antibody reactivity to U1RNP may indicate a diagnosis of mixed connective tissue disease (MCTD).(6) However, anti-U1RNP antibodies may also be seen in patients with SLE, systemic sclerosis (SSc) and idiopathic inflammatory myopathies (IIM).(6,7) In addition, there exists diverse analytes for the detection U1RNP with differential correlations with MCTD, SLE, SSc, and IIM.(8) Anti-Scl 70 (topoisomerase 1) antibody is one of three autoantibodies included in the 2013 American College of Rheumatology/European League Against Rheumatism (ACR/EULAR) classification criteria for SSc.(9). It is generally associated with diffuse cutaneous SSc clinical manifestations including interstitial lung disease with poor prognostic outcomes.(10) Lastly, antibodies to JO1, is a member of the amino acyl-tRNA synthetase family of enzymes is suggestive of diagnosis of IIM, specifically anti-synthetase syndrome and is included in the 2017 EULAR/ACR classification for IIM.(11)

For more information, see the individual test codes.

Reference Values

SS-A/Ro ANTIBODIES, IgG
<1.0 U (negative)
> or =1.0 U (positive)
Reference values apply to all ages.

SS-B/La ANTIBODIES, IgG
<1.0 U (negative)
> or =1.0 U (positive)
Reference values apply to all ages.

Sm ANTIBODIES, IgG
<1.0 U (negative)
> or =1.0 U (positive)
Reference values apply to all ages.

RNP ANTIBODIES, IgG
<1.0 U (negative)
> or =1.0 U (positive)
Reference values apply to all ages.

Scl 70 ANTIBODIES, IgG
<1.0 U (negative)
> or =1.0 U (positive)
Reference values apply to all ages.

Jo 1 ANTIBODIES, IgG
<1.0 U (negative)
> or =1.0 U (positive)
Reference values apply to all ages.

Interpretation

A positive antibody result in the appropriate clinical context maybe suggestive of connective tissue disease.

For more information, see the individual test codes.

Cautions

Negative results to do not rule out the presence of connective tissue disease.

Clinical Reference

1. Bossuyt X, De Langhe E, Borghi MO, Meroni PL. Understanding and interpreting antinuclear antibody tests in systemic rheumatic diseases. Nat Rev Rheumatol. 2020;16(12):715-726
2. Armagan B, Robinson SA, Bazoberry A, et al. Antibodies to both Ro52 and Ro60 for identifying Sjogren's syndrome patients best Suited for clinical trials of disease-modifying therapies. Arthritis Care Res (Hoboken). 2022;74(9):1559-1565
3. Deroo L, Achten H, De Boeck K, et al. The value of separate detection of anti-Ro52, anti-Ro60 and anti-SSB/La

reactivities in relation to diagnosis and phenotypes in primary Sjogren's syndrome. Clin Exp Rheumatol. 2022;40(12):2310-1317
4. Lee AYS, Reed JH, Gordon TP. Anti-Ro60 and anti-Ro52/TRIM21: Two distinct autoantibodies in systemic autoimmune diseases. J Autoimmun. 2021;124:102724
5. Aringer M, Costenbader K, Daikh D, et al. 2019 European League against Rheumatism/American College of Rheumatology classification criteria for systemic lupus erythematosus. Arthritis Rheumatol. 2019;71(9):1400-1412
6. Alarcon-Segovia D, Cardiel MH. Comparison between 3 diagnostic criteria for mixed connective tissue disease. Study of 593 patients. J Rheumatol. 1989;16(3):328-334
7. Hoffmann-Vold AM, Gunnarsson R, Garen T, Midtvedt O, Molberg O. Performance of the 2013 American College of Rheumatology/European League against rheumatism classification criteria for systemic sclerosis (SSc) in large, well-defined cohorts of SSc and mixed connective tissue disease. J Rheumatol. 2015;42(1):60-63
8. Tebo AE, Peterson LK, Snyder MR, Lebiedz-Odrobina D. Clinical significance of anti-U1 ribonucleoprotein antibody is analyte dependent: implications for laboratory reporting, interpretation, and interassay correlations. Arch Pathol Lab Med. 2023;147(12):1461-1465
9. van den Hoogen F, Khanna D, Fransen J, et al. 2013 classification criteria for systemic sclerosis: an American College of Rheumatology/European League Against Rheumatism Collaborative Initiative. Ann Rheum Dis. 2013;72(11):1747-1755
10. Santos CS, Morales CM, Castro CA, Alvarez ED. Clinical phenotype in scleroderma patients based on autoantibodies. Rheumatol Adv Pract. 2023;7(Suppl 1):i26-i33
11. Lundberg IE, Tjärnlund A, Bottai M, et al. 2017 European League Against Rheumatism/American College of Rheumatology classification criteria for adult and juvenile idiopathic inflammatory myopathies and their major. Ann Rheum Dis. 2017;76(12):1955-1964

Performance

Method Description

Antigen is coupled covalently to polystyrene microspheres, which are impregnated with fluorescent dyes to create a unique fluorescent signature. Antibodies, if present in diluted serum, bind to the antigen on the microspheres. The microspheres are washed to remove extraneous serum proteins. Phycoerythrin (PE)-conjugated antihuman IgG antibody is then added to detect IgG antibodies bound to the microspheres. The microspheres are washed to remove unbound conjugate, and bound conjugate is detected by laser photometry. A primary laser reveals the fluorescent signature of each microsphere to distinguish it from microspheres that are labeled with other antigens, and a secondary laser reveals the level of PE fluorescence associated with each microsphere. Results are calculated by comparing the median fluorescence response for microspheres to a 4-point calibration curve.(Package insert: Bioplex 2200 ANA Screen. Bio-Rad Laboratories; 02/2019)

PDF Report

No

Day(s) Performed

Monday through Saturday

Report Available

Same day/1 to 2 days

Test Definition: ENAE

Antibody to Extractable Nuclear Antigen Evaluation, Serum

Specimen Retention Time

14 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Superior Drive

Fees & Codes

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification

This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

86235 x 6

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
ENAE	Ab to Extractable Nuclear Ag Eval,S	90228-8

Result ID	Test Result Name	Result LOINC® Value
JO1	Jo 1 Ab, IgG, S	33571-1
RNP	RNP Ab, IgG, S	29958-6
SCL70	Scl 70 Ab, IgG, S	47322-3
SM	Sm Ab, IgG, S	18323-6
SSA	SS-A/Ro Ab, IgG, S	33610-7
SSB	SS-B/La Ab, IgG, S	33613-1